NAME: _____

Human Cannonball Stunts

You are working as a safety coordinator for a variety show in Las Vegas where one of the acts involves a human cannonball.

Check out the view from the performer's perspective: https://youtu.be/VcgPMxbgapE

1. The performer wants to increase the height of her act for a future show, so you run a simulation and show her the results on a graph found at: https://www.geogebra.org/geometry/sqqvsrwv
   a. Approximately how high will the NEW stunt set up project the performer?
   b. How much higher will the performer travel compared to earlier acts as described in the video?
   c. Approximately how far will the NEW stunt set up project the performer?

2. Analyzing the simulation graph found at https://www.geogebra.org/geometry/sqqvsrwv, approximate three points on the parabolic path of the new act.
   a. Initial take-off point
   b. Vertex
   c. Landing point

3. Model the path of the performer as a quadratic function comparing horizontal distance and vertical distance where x represents horizontal distance and f(x) represents vertical distance.

4. Test the above quadratic function by graphing it at https://www.geogebra.org/geometry/sqqvsrwv

6. Using the function $h(t) = -13t^2 + 49t + 7$ where t represents time and $h(t)$ represents height of the simulated stunt, calculate, to the nearest tenth of a second, how long it will take the performer to land assuming that the safety air bag is position on the ground.